



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,548	09/27/2006	Hiroshi Komatsu	1270.46593X00	3540

20457 7590 09/14/2010
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER

CHU, JOHN S Y

ART UNIT	PAPER NUMBER
----------	--------------

1795

MAIL DATE	DELIVERY MODE
-----------	---------------

09/14/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,548	Applicant(s) KOMATSU ET AL.	
	Examiner JOHN S. CHU	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1795

DETAILED ACTION

This Office action is in response to the RCE filed January 25, 2010.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, and 5-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over USHIROGOUCHI et al (6,071,670).

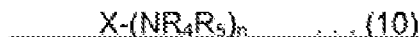
The claimed invention is drawn to the following;

Art Unit: 1795

1. (Currently amended) A photosensitive resin composition comprising:

(A) a polymer having an acid functional group and/or a substituent derived therefrom;

(B) a compound represented by the general formula (10):



wherein X represents an n-valent organic group, n represents an integer of 2 to 6,
and each of R₄ and R₅ represents hydrogen or a monovalent organic group, having at
least one substituent derived from an amine functional group, wherein said at least
one of said monovalent organic groups substituent is selected from the group
 consisting of:



wherein R₃ represents a monovalent organic group; X₃ represents an oxygen, sulfur, or nitrogen atom; and n represents 1 when X₃ is an oxygen atom or a sulfur atom, or n represents 2 when X₃ is a nitrogen atom;

(C) a photoreactive compound; and

(D) a solvent.

USHIROGOUCHI et al discloses a polymer having a polyamic acid backbone, a photoacid generator and a nitrogen-containing compound as disclosed in column 30, line 30-56,

Art Unit: 1795

specifically lines 36-38 for the functionally equivalent diamine compounds listed which include ethylene diamine, hexamethylene diamine and tetramethylene diamine. The claims as recited state that R4 and R5 represent hydrogen or a monvalent organic group such that diamines would read on the claim.

USHIROUGOCHI et al lacks a working example with the disclosed diamine compounds as recited in the specification.

It would have been *prima facie* obvious to one of ordinary skill in the art of photoresist composition to use any of the listed nitrogen-containing compounds in the examples with the reasonable expectation of excellent transparency and dissolution rate. SUZUKI et al (2002/0090569) disclose a nitrogen-containing compound to include those listed.

3. Claims 1, 2, 7 ,8, 10, 11, 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over SUZUKI et al (2002/0090569).

The claimed invention has been recited above and is included by reference.

SUZUKI et al discloses an acid labile containing resin, a photoacid generator and a nitrogen-containing compound (column 26, lines 20-36) that include diamines as seen below:

Art Unit: 1795

20 Examples of the nitrogen-containing compounds (ii) include ethylenediamine, N,N,N',N'-tetramethylenediamine, tetramethylenediamine, hexamethylenediamine, 4,4'-diaminodiphenylmethane, 4,4'-diamino diphenyl ether, 4,4'-diaminobenzophenone, 4,4'-diaminodiphenylamine, N,N,
25 N',N'-tetrakis(2-hydroxyethyl)ethylenediamine, N,N,N',N'-tetrakis(2-hydroxypropyl)ethylenediamine, 2,2-bis(p-aminophenyl)propane, 2-(m-aminophenyl)-2-(p-aminophenyl)propane, 2-(p-aminophenyl)-2-(m-hydroxyphenyl)propane, 2-(p-aminophenyl)-2-(p-
30 hydroxyphenyl)propane, 1,4-bis[1-(p-aminophenyl)-1-methylethyl]benzene, 1,3-bis[1-(p-aminophenyl)-1-methylethyl]benzene, bis (2-dimethylaminoethyl)ether, bis (2-diethylaminoethyl)ether, and the like. As examples of the nitrogen-containing compound (iii), polyethyleneimine,
35 polyallylamine, a polymer of dimethylaminoethylacrylamide, and the like can be given.

The reference lacks a working example using the diamines listed in column 26, however clearly direct the skilled artisan to use those compounds as acid diffusion controllers.

It would have been *prima facie* obvious to one of ordinary skill in the art of photoresists to use the listed nitrogen-containing compounds as disclosed above in a working example and reasonably expect same or similar results for resolution and edge roughness.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. THACKERAY et al (2003/0203310, 7,060,413, and 6,727,049) disclose hexamethyl diamine nitrogen-containing additives wherein these references are cumulative to the reference above is cited of interest.

SUZUKI et al (6,899,989) is the U.S. Patent to the U.S. Patent Publication 2002/0090569.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

Art Unit: 1795

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John S. Chu/
Primary Examiner, Art Unit 1795

J.Chu
September 12, 2010